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of Latin give similar variations, only fatigue appears more quickly. The effect of singing was studied in two experiments. In this case the period of increased activity drops out. In the second preliminary communication, the influence of reading numbers is studied. This work seems to lessen all the ergograph records in the first two experiments, but, in a third, to have the same effect as reading. This may be explained as due to the fact that practice diminishes the fatigue resulting from a given amount of work. The most important thing in these articles is the suggested application of this method of studying fatigue to pedagogical problems. J. A. B.

Recherches sur la localisation des sensations tactiles. Par M. VICTOR HENRI. Archives de Physiol. norm. et Path., No. 4, Oct. 1893.

Where one considers the localization of two points, the results of Weber's circles are considered good, but where only one is to be located, M. Henri thinks the best way is to do it on a photograph or by word. The photographic method was chosen. It was found that the error in direction was nearly constant for any single point of contact. The experiments on the dorsal surface of the fingers of the right hand show that there is a general tendency to locate the points of contact too near the end of the finger. At the end of the finger, however, the tendency is in the opposite direction, though the size of the errors is very much less. There are also some other points at the beginning of the second phalanx similar to the end of the finger. The errors in the transverse direction are of significance only in rare cases. If the point is placed on the side of the finger, instead of in the middle, the error is easily recognized. For any one point the error in localization is very limited, but it varies between 10 and 2 mm. for different points touched. The corresponding parts of different fingers do not vary appreciably. The middle of the first and second phalanges shows the greatest errors in localization, namely, 10 and 8 mm. Near the wrinkles (at the joints), which separate the two phalanges, the errors are equal to 4 or 5 mm. On the wrinkles and on the third phalanx their minimal value, which is 2 or 3 mm., is reached. At other points, however, they are even less than this. One subject found difficulty in distinguishing between points on the ring finger and those on the middle finger, though the amount of error in either case was constant. The difficulty disappeared in moving either of the fingers slightly. On the palm of the hand and at the commencement of the arm, the errors were different in direction and extent. The direction of error was always towards the part which separated the lower arm from the wrist, while the amount of error varied between 5 and 40 mm., being least when the point of touch was nearest this part and greatest in the reverse.

The conclusions from the experiments on three subjects are: (1) Where points are touched on the skin, they are located on the photograph at a point which, in relation to the touched point, is almost constant in direction. (2) Almost always the point indicated on the photograph is more near to a certain wrinkle or fold of the skin (*e. g.*, when there is a joint below) than is the point touched. (3) As the point of contact approaches this wrinkle the errors in localization decrease.

This shows us that all the points where we can localize a touched point are included on the inside of a fixed curve, which the point touched, as a rule on the inside of it, does not meet. Hence two elements of the curve can vary, namely, the size of it and also the distance from its centre to the point touched. These two elements

determine our spatial sensibility in the sense of touch. It follows, then, that if the two points in Weber's circles are not touched simultaneously, they are not located the same as if they were. If, also, any point B is located at A, the point A will not be located at B.
A. E. SEGSWORTH.

IV.—MORBID PSYCHOLOGY.

Die Mehrheit geistiges Personlichkeiten in einen Individuum. Eine psychologische Studie. Von DR. S. LANDMANN. Stuttgart, 1894, pp. 186.

The author is a practicing physician, who for forty years has sought to gain a conception of the nature of mental activities, and here gives us his conclusions, which are as interesting as they are new and carefully matured. Binet's theory of *simultaneous* activity of different spheres of consciousness is radically wrong. All facts on which this theory rests may be explained by supposing that the cortical ganglia of the brain can act unconsciously and reflexly when dissociated, as they may be by many causes, from the cells of the cortex which mediate consciousness. After discussing quite a mass of casuistical material concerning catalepsy, somnambulism, suggested acts and hallucinations, amnesia and distraction, anæsthesia, hysteria, etc., the author reaches the following general conclusions: Lethargy and complete hypnosis are to be explained as transient loss of function by all the brain organs. Cataleptic attitudes are the isolated activity of sub-cortical motor centres. Unconscious imitations of movement by cataleptics and hysterical patients with anæsthesia are due to the isolated activity of the sub-cortical visual centre. The unconscious verbal imitations of catalepsy is due to the isolated activity of sub-cortical centres of hearing. Unconscious mimicry by cataleptic and hysterical patients, and the active innervation feelings of anæsthetic hysteria, are due to isolated activity of the sub-cortical centres of feeling. The acts of catalepsy, the suggestions of hypnotism and hysteria, and suggestions of general hallucination tending toward a change of personality, are due to the activity of a larger or smaller group of cells in the cortex, *i. e.*, to the isolated consciousness of a larger or smaller series of connected concepts. Systematic æsthesia and the "rapport" of hypnosis are due to the activity of cortical cells sensitive to an isolated concept feeling, *i. e.*, an isolated self-consciousness. Hysterical anæsthesia and suggested anæsthesia, lameness, amnesia, etc., are due to the shunting out of isolated cortical cells. Post-hypnotic suggestion and apparent multiplicity of psychic existences are due to the activity of isolated cortical cells, together with the simultaneous normal activity of other brain organs. Systematic anæsthesia, negative hallucinations, and the natural anæsthesia of hysteria, are correlated with the inactivity of the cortical cells responding to the action of the concept, along with simultaneous normal activity, *i. e.*, partial self-consciousness. The automatic activities of self-conscious subjects are due to the isolated activity of sub-cortical ganglia, along with the normal activity of other cortical cells. Finally, somnambulism is due to changing activity of various larger or smaller parts of the brain, with complete inactivity of the other parts.

To complete personality, the sub-cortical centres and all the cortex must act together. The individual who can be conscious of all concepts arising within or without, and of all feelings of activity, is a complete psychic personality. More or less